RAPA NUI'S POLITICAL ECONOMY AND THE VISIBILITY OF ITS MONUMENTAL ARCHITECTURE

Dale F. Simpson Jr.
Department of Anthropology, College of DuPage - Glen Ellyn, Illinois

INTRODUCTION

Rapa Nui has a rich tradition of cultural evolution, adaptation, and megalithic elaboration. While famous for its monolithic *moai*, a most intriguing development was the construction, rebuilding, and eventual destruction of the island's approximately 300 *ahu.* As fixed sacred and secular features in the landscape, *ahu* acted as cultural stages in which the ancient Rapa Nui drama unfolded, for the platforms provided spatial centers for the social, political, economic, and ceremonial activities of the island's inhabitants. They also housed ancestral statues (Heyerdahl and Ferdon 1961), human remains (Mulloy 1997), and denoted territoriality (Stevenson 1986, 2002). Drawing on the benefits of using Rapa Nui's monumental architecture for archaeological analysis and interpretation (Beadsley 1990: 1-2), this investigation focuses upon how the island's chiefs and elites created a political landscape, anchored upon *ahu*, in order to monitor coastal resource sectors and promote cultural hegemony. I suggest that the ancient Rapanui political landscape was demarked by "visualscapes" (Llobera 2003) provided by *ahu*. These visualscapes supported a panoptic model of surveillance (Foucault 1980; Yekutieli 2006) that enabled chiefly and elite managers to oversee dispersed landscapes, populations, and resources.

Archaeological analysis focuses on two questions: was the spatial arrangement of resource sectors based on field-of-view intervisibility between and amongst district *ahu*? And, did this in turn help to denote chiefly control, assisting elites to monitor production and allocation of staple resources? The GIS (Geographic Information Systems) application of viewshed analysis is used to identify commanding visualscapes created by the island's *ahu*, leading to a larger issue: how did Rapanui chiefs and elites maintain control over the island's political economy and influence its socio-political trajectory during the chiefdom integration period? On Rapa Nui, this helps us to understand how chiefs and elites were able to fund, construct, and maintain the prolific archaeological features found throughout the island.

RAPANUI ELITE

At the peak of chiefdom integration (1400-1600 CE), the Rapanui socio-political system was highly stratified (Métraux 1940) and dominated by a chiefly/elite-monitored political economy (Stevenson & Haoa 1998). The importance of chiefs and elites in overseeing ancient political economies is well documented in Polynesia, with examples from Hawai'i (Kolb 1994; Earle 1997), French Polynesia (Emory 1943), Tikopia (Firth 1967), and Tonga (Kirch 1990b). These studies underline how elite classes "managed and oversaw various aspects of the society, including food production, specialized craft production and prestige goods exchange, and the performance of ritual behavior" (Graves & Sweeny 1993:113).

The large number of monumental works on Hawai'i, Tonga, and Rapa Nui has been inferred to reflect the complex level of chiefly management, the size of labor force directed by corporate strategies, and intense control over staple resources by elite groups (Kolb 1994; Earle 1997; Stevenson 1997). Also, monumental architecture bolstered chiefly ideologies (Kirch 1990b; Earle 1997), denoted elite-built environments (Kirch 1990b; Martinsson-Wallin 1994), indicated territoriality (Stevenson 2002), and helped maintain the political economy (Graves & Sweeny 1993; Earle 1997; Stevenson 1997).

There existed at least two or three levels of chiefly and elite retainers on Rapa Nui (Stevenson 1997). First was a noble and ascribed elite associated with the Miru clan, *ariki mau* and *ariki paka* who traced their lineage to Hotu Matu'a and further back to the ubiquitous Polynesian gods Tangaroa and Rongo (Routledge 1919; Métraux 1940). It has been argued that it may have been these elites, led by powerful paramount chiefs, who first initiated *ahu* construction and statue carving on a pan-island scale which helped to integrate the Rapanui chiefdom (Sahlins 1958; Stevenson 2002). In addition, "...chiefs or lineage heads who were not *ariki* (*i.e.*, not Miru) were called *honui.* While the *ariki mau* held the highest social prestige and the most ... spiritual power, each individual chief had political power appropriate to his hereditary status. That status, in turn, was reinforced and enhanced by economic success, demonstrated by the ability to amass surplus goods and command labor" (Van Tilburg 1994: 90). *Honui,* when adjoined with a powerful priestly class (*ivi atua*) and probably high status guilds or experts (*maori* or *tufunga*), were in direct control of the financing, building, and use of Rapa Nui's monumental architecture. Vargas (1998:117-8) outlined the coastal settlement pattern of elite members (Household Type I). Some 150-300 m inland from district *ahu* of the *mata* (clan), elite homes called *hare paenga* (boat-shaped house) were found in association with *umu pae* (cooking ovens) and *hare umu* (cook houses). Here, chiefs and elite controlled *mata* territory by maintaining constant vigilance over their district *ahu,* deceased ancestors (*moai* and human remains), and their subjects living inland. One advantage of this elite positioning on the coast was the ability to monitor and exploit marine and coastal resources that, through *tapu*, were only available to chiefly and elite retainers.

The presence of both commoners and elites has been

found at Maunga Tari (Stevenson 1997), La Pérouse (Stevenson & Haoa 1998), and Vaitea (Stevenson *et al.* 2005). In these areas, elite retainers oversaw agricultural fields and planting strategies such as mulched soils, veneer surfaces, stacked boulder concentrations, *pu* (steep sided rock depressions), *manavai*, and planting circles (Stevenson & Haoa 1998; Wozniak 2001). Thus, a chiefly and elite class has been found in both inland and coastal regions.

Over time and through the carving of megalithic features, crafts guilds including *moai* carvers and *ahu* architects increased their *mana* and subsequently their socio-political power, and may have become an achieved elite class (Van Tilburg 1988a). Together they either competed and/or collaborated with local chiefs (and perhaps the Miru) for prestige and resource control.

In summary, four groups represented the island's ancient elite: members of the Miru (*henua* and *paka*), *honui*, priests (*ivi atua*), and specialists (*maori* and *tufunga*). They represented the main catalysts and organizers for the propulsion of Rapa Nui's ancient political economy.

Resource Control in the Oral Tradition, Ethnohistoric, and Ethnographic Records

> [A]fter leaving ʻAnakena, Hotu Matuʻa led a solitary life and devoted himself to agricultural pursuits. As he was an *ariki henua* and a sacred person, *he should have delegated such work to subordinates* and offered only the stimulation of this good advice. *He was apparently obsessed with the desire to provide a secure economic future for his people*. (Englert 1970:84, emphasis added)

The above highlights two interesting observations. First, that from colonization to the integration of the Rapa Nui chiefdom, chiefs and associated elite had managerial authority over "subordinates" responsible for food production and collection. Often, the basis for this managerial authority and chiefly power came from ascribed genealogical positioning. Starting from some mythical and/or human ancestor, high rank was traced through patrilineal descent and continued through the male primogeniture of each generation (Sahlins 1958; Ayres 1973). This ascribed positioning and associated authority were legitimized by *mana* that "manifested the power of the gods in the human world" (Shore 1989:164). Enforced by tapu, chiefs maintained their sanctity, authority and constructed "an economy of *mana* in which generative powers were appropriated, channeled, transformed, and bound" (*ibid.*:143). In other words, "chiefly sanctity ... is a critical aspect of Polynesian social transformation" (Kirch 1984:38), and undoubtedly formed the basis from which Rapanui chiefs maintained their privileged position and authority.

Second, the "desire to provide a secure economic future" by the island's first chief on one of most ecologically depauperate and isolated Polynesian islands (Diamond 2005), resulted in the formulation of a managerial system that closely monitored valuable resources. Considering Rapa Nui's limited maritime biodiversity (DiSavlo *et al.* 1993), the "security" of resource production must have been top priority for the island colonizers, but more so for the later integrated island chiefdom. Over time, this overt need for resource "security" required and facilitated a monitored political economy that not only produced and distributed resources for island inhabitants, but also helped finance chiefly aspirations and elite agendas.

Observations in April 1786 led La Pérouse to write, "there is probably a chief in each district, who *looks* more particularly after the plantations" (La Pérouse 1797:12, emphasis added). Perhaps referring to *honui*, La Pérouse highlights a similar situation to the prehistoric political ecomony of Kauaʻi. There, Earle (1997) explains that with the assistance of lesser chiefs (*konokihi*), Hawaiian *aliʻi* had control over commoners, coporate work strategies, and surplus taro resources from wet farming plots. However, control over surplus staple resources was not used to feed more people, but instead was used by ancient Hawaiian chiefs to finance warfare, to acquire luxury goods like feathered cloaks and hats, and to help in the construction of monumental architecture and "landesque capital intensifications" (Kirch 1994).

Roussel made observations about the daily life of the islanders and the nature of their customs, including chiefly resource control:

> [T]here had been an uninterrupted succession of great chiefs or kings. These kings, who were regarded as gods, exercised absolute power over the island and used their authority to retain the prestige associated with the gift of apparently superhuman powers, as well as certain personal privileges. *To the kings alone belonged the first fruits of the land. These offerings were brought to them with great ceremony*". (Roussel 1868, as cited in Altman 2004:40, emphasis added)

Firth (1967) pointed out that the central role occupied by chiefs in Tikopia during its annual first fruits cycle sanctioned and regulated production. This regulation, as Kirch (1984:38) believes, "was intimately tied to ritual sanction and control" and "it is precisely at the level of ritually controlled production that the political economy held sway over the domestic mode of production" and provided a surplus for chiefly ambition. Plus, as *ahu* were the "sites of two broad classes of ritual: rites of passage and first fruits ceremonies" (Van Tilburg 1988b:96), it appears that Rapa Nui's monumental architecture acted as a hegemonic backdrop to help the *ariki* and the elite control the valuable resources of first fruit ceremonies.

Roussel (1868, cited in Altman 2004:41) observed the implementation and severity of chiefly *tapu* over the harvesting and allocation of agricultural and maritime resources: "Woe unto anyone who dared to violate the taboo. Often, such an act would cost him the destruction of his property and sometimes, even, the loss of life". Simply, chiefly tapu gave the *ariki* a supernatural legitimization over the staple resource economy. Kirch (1984:165) has argued a

similar point that "tapu associated with Polynesian *ariki* was not merely a passive indicator of rank, it was actively used as an economic tool" which allowed Polynesian chiefs to take control of economic forces in the interest of the community — as well for the chief.

Routledge (1919) and Métraux (1957) provide examples of how chiefly *mana* and *tapu* helped to facilitate mandatory inspection and participation of chiefs in economic activities, ceremonies, and blessings. This included inspecting boats, tattoos, and *kohau rongo rongo* tablets, blessing homes, and "making tours of the island to inspect the schools for priests and listen to recitations of the sacred chants associated with various economic and social activities" (ibid.:91-3). These activities show that, by keeping a chiefly eye over economic activities, rituals and craft production, *ariki* played a significant role in the island's ancient socio-political organization and political economy.

Resource Control in Anthropological and Archaeological Interpretations

Anthropological and archaeological investigations support the idea that chiefly and elite resource control was, "intimately and strongly linked to the typical Polynesian scheme of hereditary land use rights" (Van Tilburg 1994:94). This scheme was directed by the principles of *mana* and *tapu*, with control given to those with the most senior and ranking genealogical position. Initially, this hereditary – almost kinship-like control over resources — supported the "domestic mode of production" (Sahlins 1972), the "production of use" (Brookfield 1972) and/or the "subsistence economy" (Johnson & Earle 2000). However, with the increase in polity size (*i.e.*, the formation of the *mata*), the introduction of the sweet potato (Wallin *et al.* 2005), and the intensification of production (Kirch 2000), there was also an increase in political complexity (Carneiro 1967) and the transformation of the subsistence economy into one that was political (Johnson and Earle 2000). Thus, kinship relations that once anchored the domestic mode of production were no longer sufficient to organize and control the "social production" (Kirch 2000) of the *mata.* With a managerial need for economic and socio-political organization, the emergence of chiefly and elite managers was required (Flannery 1972; Peebles & Kus 1977; Johnson 1978), along with a system to oversee and monitor resource sectors.

The most relevant archaeological work concerned with how elite overseeing and monitoring of the staple resource economy influenced the socio-political trajectory of ancient Rapa Nui includes investigations by Stevenson (1997), Stevenson and Haoa (1998, 2008), Stevenson *et al.* (1999, 2005), Wallin *et al.* (2005), and Howard (2007). Their work is crucial in developing the current discussion and is used as a base for archaeological analysis and interpretation. They argue that the cultural elaboration of each *mata* (*i.e.*, monumental architecture, extraction of material for exchange, and additional investments in food production) was supported by a "staple financed economy" (D'Altroy & Earle 1985) "where foods from the agricultural, marine, and mammalian resource base were [monitored and] distributed by elite persons to reimburse people for their time spent in corporate undertakings" (Stevenson & Haoa 1998:205). Stevenson further outlines this chiefly and elite controlled socio-political system.

> As documented elsewhere in the Pacific region, this type of social system was dominated by elite personnel who centralized management of the productive economy and legitimized this control through ideology, architecture, and ceremony (Kirch 1984). In addition, control was maintained through the ownership of land and by access restriction to key resources within its boundaries. The results of these management efforts were directed towards generating surplus agricultural production that could be funneled into the construction of monumental architecture. This, in itself, further substantiated claims to land and resources and legitimized the position of the elite. (Stevenson 1997:3)

Archaeological evidence for this system was found in the inland regions of Rapa Nui, at Maunga Tari (Stevenson 1997), La Pérouse (Stevenson & Haoa 1998, 2008; Stevenson *et al.* 1999), and Vaitea (Stevenson *et al.* 2005; Howard 2007). Within these regions, archaeological features such as small *ahu*, *hare paenga*, rectangular homes, and petroglyphs have been interpreted as structures and ideological markers of an elite-built environment constructed to monitor agriculture production and allocation. Considering that "generating a surplus production may not have come completely voluntarily and required some direct oversight" (Stevenson *et al.* 2005:135), and that these inland areas were some distance from coastal ceremonial complexes, elite retainers used familiar architectural features and symbols from chiefly ideologies to control resource sectors and monitor inland inhabitants. Thus, non-elite individuals caring for, harvesting, and transporting produce to lowland destinations would be constantly reminded as to whom the correct owners were, and who the consumers of the crops would be.

To better interpret Rapa Nui's ancient political economy, this paper aims to support the claim by Stevenson and others that, during the period of chiefdom integration, the island's elite classes were in direct control of the staple finance economy. I suggest that this control not only supported the construction of monumental works and statuary, but also was facilitated by "corporate strategies" (Blanton *et al.* 1996) whereby:

> ...relations of people to productive resources [were] typically in terms of ownership of productive lands. Institutional ownership ... creates a power relationship by which access to the lands can be assigned to people in return for their obligations to provide labor and/or goods to the chiefly owner. A corporate group in a complex society is not a commune. Access is structured in ways to finance the operation of the ruling elite, craftsmen, warriors,

> priests, managers and commoners working on political projects. (Earle 2002:23)

Examples throughout Polynesia highlight how corporate strategies funded and created monumental architecture and influenced the long-term evolutionary trajectories of chiefly organized societies (Kirch 1990a, 1990b; Kolb 1991; Graves and Sweeny 1993; Earle 1997).

While previous works highlight the ancient political economy of Rapa Nui and lay a framework to better investigate how Rapanui chiefs and elite retainers oversaw resource sector production, there are two problems. While it seems reasonable that the association of chiefly symbols and features with agricultural fields implies elite overseeing and monitoring, unless this can be archaeologically quantified using some form of spatial and statistical analysis, it is no more than an assumption. And, although the inland area provided a great deal of the resources needed to finance the activities of the chiefly and elite class, there were areas closer to coastal district *ahu* that were also producing staple resources. But, no prior investigation has focused on how elite monitoring was accomplished here or how larger monumental works were used to oversee production and distribution. In an attempt to add to prior studies, this investigation archaeologically quantifies how the elite monitored and oversaw resource sectors close to coastal regions using the visualscapes provided by district *ahu*.

Study Area – Northwest Coast (Figure 1)

The northwest coast (NWC) study area is within the archaeological quadrangles 26 (Maitaki te Moa) and 32 (Omohe) and is composed of ~2 km of coastal land (north to south) from Ahu O Hurari to Ahu Vai Mata. According to Routledge (1919), this was Miru land, while Hotus *et al.* (1988) divided the area between the Hamea and Kao and Rau Uri *mata*. Using *ahu* distribution, Stevenson (2002) considers this district area Vai Mata. Besides general surveys and excavations (Thomson 1891; Cristino *et al.* 1985; Vargas *et al.* 2006), archaeological work interested in *moai* and *ahu* (Martinsson-Wallin 1994; Shepardson 2005) and the extensive fieldwork carried out by the Pacific Prehistory Project and the CONADI (National Corporation for Indigenous Development) archaeological project, little has been published about this area of the NWC.[1] This may be due to the fact that no roads reach this area and/or that there exist fewer megalithic remains than are found on the southern coast. In total, there are five *ahu* (image Ahu O Hurari, Maitaki te Moa, Motu Tevake, Vai Mata, and semipyrmidal Ahu Taka Para Puna) and 129 resource sectors used in analysis. Spatial data for *ahu* was geo-referenced from Martinsson-Wallin (1994) and Shepardson (2005), while permission was given by Terry Hunt, Alex Morrison, Francisco Torres, and colleagues to use the spatial data of resource sectors from the Pacific Prehistory Project.

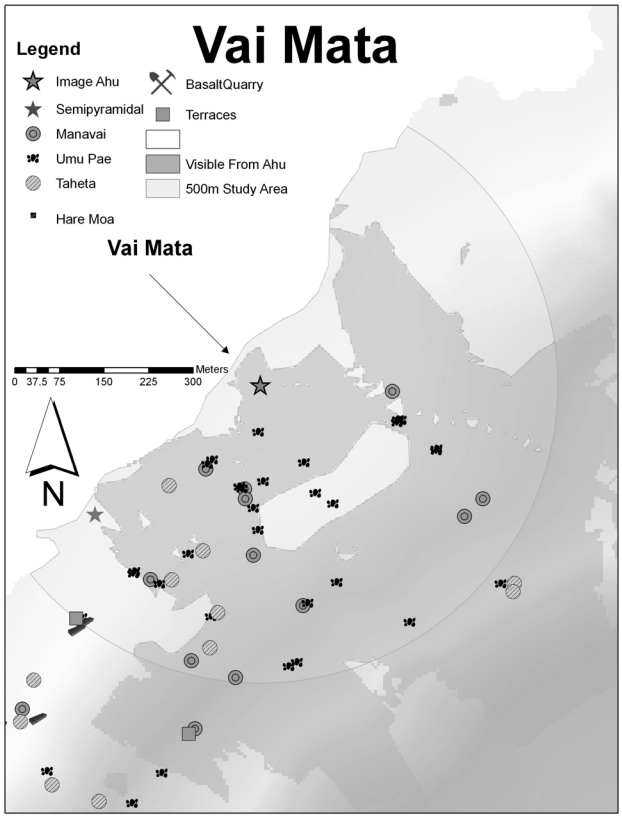


Figure 1. Single Viewshed from Vai Mata.

Study Area – Southern Coast (Figure 2)

The southern coast (SC) study area is found within the archaeological Quadrangles 5 (Hanga Poukura), 6 (Vaihu) and 7 (Akahanga) and is composed of ~7.5 km of coastal land (east to west) from Ahu Poukura to Ahu Akahanga. According to Routledge (1919), this area was divided between Ngatimo, Marama, and Ngaure clans, while Hotus *et al.* (1988) divided the area between the Ngatimo, Marama Tupahotu, Ngaure, and Naku O Ure Ohei *mata*. Using *ahu* distribution, Stevenson (2002) considers these clan areas Poukura, Vaihu, and Akahanga. Unlike the NWC, the SC has been the subject of many archaeological investigations including general surveys (Thomson 1891; Lavachery 1939; Englert 1974), settlement pattern studies (Cristino *et al.* 1981; Budd & Vargas 1993; Vargas 1993, 1998; Vargas *et al.* 2006), studies on socio-political complexity and cultural reconstruction (Stevenson 1984, 1986), and investigations of *moai* and *ahu* (Stevenson 1986; Beardsley 1990; Van Tilburg 1994; Martinsson-Wallin 1994; Shepardson 2005). Thus, there is a copious amount of published material available for comparison, discussion, and for analytical purposes. In total, there are six *ahu* (image Ahu Poukura, Vaihu, and Akahanga and semipyramidal Ahu 5-153, 6-141 and 6-256) and 420 resource sectors used in analysis. Spatial data for *ahu* was georeferenced from McCoy (1976), Cristino *et al.* (1981), Martinsson-Wallin (1994), and Shepardson (2005), while permission was given by Claudio

Cristino, Patrica Vargas and colleagues to use the spatial data of resource sectors from the *Inventario Arqueológico de Isla de Pascua* (1981).

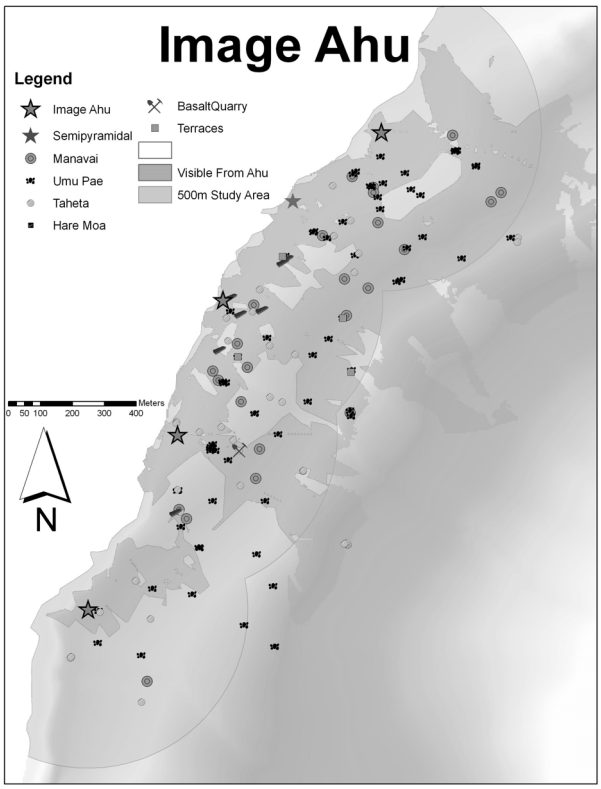


Figure 2. Multiple Viewshed of Image Ahu from the Vai Mata District.

Spatial Database – *Ahu*

Some of the first research concerning Rapa Nui's monumental works consisted of descriptions and general surveys (Thompson 1891; Lavachery 1939). Routledge (1919) used the results from her survey to classify five types of *ahu*. McCoy's work (1976) proposed seven types, while Martinsson-Wallin's (1994) database of *ahu* included six classes. Love's (1993) "revisit" to *ahu* mostly focused on image (with *moai*) and semipyramidal structures. He numbered the features to around 300.

The Norwegian Archaeological Expedition brought the first use of radiometric (14C) dating for the island and its *ahu* (Heyerdahl & Ferdon 1961). Results helped to form culture-history timelines and establish that Rapa Nui's monumental works were built from 700-1600 CE (Ayres 1973, Mulloy & Figueroa 1978; Mulloy 1997). However, obsidian hydration dating of *ahu* on the southern coast shows that no platforms were defined from 1100-1200 CE. But, by 1300-1400 CE, district centers were established, and by 1400-1600 CE, southern coast *ahu* were large and elaborate architectural monuments complete with *moai* and *pukao* (Stevenson 1986). This latter period coincides with the island's chiefdom integration where chiefs and elites had control over the island's monumental architecture and ancient political economy (Stevenson 1997).

More recent examination of Rapa Nui's *ahu* have focused on stylistic and spatial analysis. Working on the south coast, Stevenson used ethnographic data from an African case study to define Rapa Nui's *mata* as corporate groups who "share a set of common concerns and procedures, an organization for the conduct of affairs, and an autonomy of action" (Stevenson 1986:70). To understand how Rapanui corporate groups related to monumental architecture, Stevenson created an architectural feature typology of *ahu* based on cluster analysis. He identified five architectural types that were hypothesized to be coincident with social groups of the district (Stevenson 1986). Obsidian hydration dates were then used to propose 12 temporal phases of the southern coastal settlement pattern. Also interested in identifying "discrete social territories" (*mata*), Beardsley (1990) used spatial provenance and stylistic attributes from southern and western coast *ahu* to reconstruct Rapa Nui's "prehistoric social landscape". To analyze the spatial provenance of *ahu*, Beardsley used nearest-neighbor analysis to group *ahu* into clusters and identify gaps between quantitatively defined spatial clusters of *ahu*. The gaps were considered to be potential boundary areas and were compared with the ethnographic record to determine that, of the four territories that existed within the study areas, two boundary locations corresponded to areas without *ahu*. To analyze the stylistic attributes of *ahu*, Beardsley used similar metric and non-metric traits as Stevenson's (1986) investigation to perform cluster analysis. Her hierarchical agglomerative method produced a dendrogram of eight clusters or style groups. These groups were then put on a map, showing that their positions were "generally coincident with the historically described distribution" (Beardsley 1990:256).

In the most extensive investigation of Rapa Nui's *ahu*, Martinsson-Wallin (1994) used 164 image *ahu* from her database of 313 to perform construction, correspondence, temporal, and spatial analysis. Her construction and correspondence analyses indicated that *ahu* platforms were highly standardized with respect to their architectural elements. This pattern led Martinsson-Wallin (1994:137) to suggest that:

> ...The original or typical *ahu* can be seen as a structure with well-dressed high rear walls as well as having a well-dressed front wall with a red lintel. The platforms project towards the sea and a ramp or a level pavement is situated in front of the platform. The structure is large and has wings, crematorium, and several statues. *Ahu* which radically diverge ... may have differed in function".

This statement describes the physical construction of "original or typical" image *ahu* and argues for the similar functions of these platforms. Subsequently, this investigation adapts Martinsson-Wallin's physical definition of image *ahu* and relies on the fact that these platforms had similar functions. This is important, because not only were the functions of image *ahu* entirely different when compared to semipyramidal

ahu, but also the temporality and the physical appearance of these latter platforms differed. For example, image *ahu* showed the strong social, ceremonial, economic, and political ties of the *mata* to the tribal land on which they were situated. In turn, this spatial situation formed a materialized place to link gods and, ancestors, both the living and the dead. These platforms advertised tribal strength and unity to other clans, while enforcing polity divisions within each *mata*. Finally, image *ahu* denoted and claimed primary resources such as water and lithics, staple resource sectors, and access points to the ocean (Routledge 1919; McCoy 1976; Love 1993; Martinsson-Wallin & Wallin 2000).

Semipyramidal *ahu* appeared later in the pre/proto-historic period and were often much smaller structures, incapable of supporting *moai*. Also, they were often marked with unworked stones where the highest point of the structure was the juxtaposition of the lateral wings. Semipyramidal *ahu* were constructed by a minimum number of individuals without a corporate strategy. Finally, these *ahu* were used to mark and house burials, burial bundles, and offerings (McCoy 1976; Love 1993; Seelenfreund 2000).

Stevenson (2002) re-analyzed Martinsson-Wallin's (1994) *ahu* data to determine if descent-social group districts could be identified on an island-wide scale. Following cluster analysis methodology, Martinsson-Wallin's attribute data was re-classified into a binary code (presence/absence). But, due to missing/uncertain data, only 15 of the 37 original architectural traits were clustered by the statistical program SYSTAT.[2] This analysis provided seven clusters that were hypothesized to represent a "general type of classification for *ahu*" (Stevenson 2002:221). This classification ranged from *ahu* that were poorly preserved, incomplete, and/or destroyed to elaborate tiered platforms with dressed seawall masonary, statues, ramps, topknots, wings, and crematoria. This latter cluster (Cluster 4), when grouped with elite *hare paenga* habitations, a model of traditional Hawaiian *ahupua'a* settlement (Handy and Pukui 1972; Kirch 1984), and the known confederacies of Rapanui (Routledge 1919; Hotus *et al.* 1988) allowed Stevenson to denote the territorial subdivisions of Rapa Nui prior to the historic changes of the chiefdom hierarchy.

In an attempt to incorporate previous archaeological work concerning *ahu*, and in response to Stevenson's (2002:226) call to use his territorial model to investigate the political organization of the Rapanui chiefdom, I appropriate analytical and interpretive frameworks from past research. First, although up to seven types of *ahu* have been identified, I focus on the visibility of image and semipyramidal *ahu* in the political landscape. Image *ahu* are the most important unit for analysis as it is hypothesized that these structures were effectively monitoring and overseeing resources sectors. Semipyramidal *ahu* are used as a control, for these structures were temporally, physically, and functionally different from image *ahu*. Visibility patterns should reflect these differences.

My analysis uses Stevenson's (2002) designation of *mata* centers and territoriality. This includes allocating a district status to the platform found at Vai Mata on the northwest coast and Hanga Poukura, Vaihu, and Akahanga on the south coast. Where these centers are represented by more than one image *ahu* (*i.e.*, Vaihu and Akahanga), entire complexes based on nearest neighbor analysis (Beardsley 1990) of platforms are used.

Spatial Database – Resource Sectors

The second spatial database is made up of primary resources (wells and quarries) and staple resource sectors (*manavai*, *umu pae* and *hare umu*, *hare moa*, *taheta*, and agricultural terraces). Primary resource sectors are those sectors whose spatial positions in the landscape were not chosen by human agents. They are points from which natural resources such as water and lithics can be extracted from and then removed to other locations and/or consumed on point. Staple resource sectors are defined as those sectors whose spatial positions in the landscape were chosen by human agents (Tilly 1994). These sectors produce, protect, and collect resources that are subsequently consumed by human populations. Staple resource sectors are represented by features such as *manavai*, *umu pae/hare umu*, *hare moa*, *taheta*, and agricultural terraces. Their appearance in the archaeological record has been well documented (McCoy 1976; Cristino *et al.* 1981).

Manavai

Representing the varied and innovative forms of Rapanui agriculture, *manavai* provided prehistoric inhabitants with tuber, crop, and tree resources. For the purpose of archaeological survey, *manavai* have been divided in two forms: above and below ground. Above ground *manavai* are created by a circular or oval wall, relatively thick, and made from locally gathered stones. On average, these structures are 1-1.5m of height and 3-10m of diameter (Vargas *et al.* 2006). Below ground *manavai* are subterranean gardens created by building up rock walls inside natural or human made depressions. These structures average 1-3 m in depth (Vargas et al. 2006), but in some cases, as at Ana Te Pahu, exceed 5 m.

In general, *manavai* are found in singular constructions, but there are areas on the island with multi-gardens, some with up to 40 *manavai* (Vargas *et al.* 2006). The ethnohistoric record speaks of paper mulberry (*Broussonetia papyrifera-mahute*) being found inside *manavai* (La Pérouse 1797; Heyerdahl 1961:57) along with other species such as banana trees (*Musa* sp.-*maika*), sugar cane (*Saccharum officinarum-toa*), *ti* (*Cordyline* sp.) and propagation plants (Vargas 1998; Stevenson *et al.* 2002). On Rapa Nui, the benefits of *manavai* include protection against the wind, sun, and sea spray. Also, water, leaves, and other biomass that accumulate in *manavai* could have created wet and rich organic mulch. In turn, these agricultural features likely provided a substantial amount of staple resources.

First fruits ceremonies would have seen the best crops of *manavai* go to elite retainers (Roussel 1868 as cited in Altman 2004; Métraux 1940) while corporate strategies may have tended chiefly owned *manavai*.

Umu Pae and *Hare Umu*

The pan-Polynesian *umu* or earth oven is found throughout Remote Oceania. On Rapa Nui, *umu pae* is also called *umu keri oka oka* and *umu ava* with the latter used for feasts for many people (McCoy 1976). These are made from large basalt stones which sometimes include recycled *hare paenga* curb-stones. *Umu* are, on average, 50-60 cm in diameter and 50 cm deep (Vargas *et al.* 2006). Cooking sites were often covered by a thatched structure called a *hare umu* identified by a mound and circle of rocks that presumably held up the *hare* (La Pérouse 1797; Routledge 1919). Multiple *umu* were sometimes found together (from 2 to 7). The explanation for this is that a lone *umu* most likely represented family organization, while more numerous *umu* represented larger family groups and elite residences (McCoy 1976).

Questions remain regarding the temporality of these ovens; most investigations indicate they represent a later time in Rapa Nui's prehistory (McCoy 1976). However, some *umu* have been dated (with calibration) between 1410-1640 CE (Vargas *et al.* 2006:118) suggesting that they formed an integral part for food preparation during the period of chiefdom integration. I argue that this feature was one of the most important resource sectors during this period as *umu* were utilized to prepare staple resources which increased elite prestige and fed *mata* inhabitants engaged in corporate works. Thus, the monitoring and control over this sector by the elite should be quite substantial and perhaps more notable than other sectors. Visibility patterns should reflect this.

Hare Moa

Although there has been debate about the function of *hare moa* or chicken houses (Geiseler 1882, as cited in Ayres & Ayres 1995; Heyerdahl 1961, McCoy 1976), recent work by Vargas and colleagues (2006) has held up the interpretation that these rectangular, thick-walled, level-topped structures measuring on average 5-6 m in length, 1.8-2.5 m in width, and 1.5-2 m in height were used to store, protect, and breed chickens (*Gallus gallus*). Their investigations from Hanga O Teo and Omohe found guano, feathers, bones, and egg shell inside *hare moa*. Further, excavation of a layer of guano inside a *hare moa* at Puna Marengo produced calibrated dates from 1520-1960 CE (Vargas *et al.* 2006:128). Although Vargas and colleagues posit that these dates represent a later historic use, if chicken houses were being used from 1500-1600 CE, their use correlates to the period of chiefdom integration when easily reproduced staple resources would have been highly valuable and needed for *mata* elaboration. And, if this time also represents a period of island-wide deforestation (Bahn & Flenley 1992) which resulted in a limited amount of large ocean-going canoes for fishing and marine resource collection, the need for chickens and eggs as protein sources would be greatly exacerbated, not to mention the need for feathers and bones for utilitarian and ceremonial purposes.

Thus, it comes as no surprise that in an attempt to increase the fertility of chickens, incised human skulls (*puoko moa*) which represented the *mana* of important people were put inside *hare moa* (Routledge 1919). I suggest that the placement of *puoko moa* inside *hare moa* not only was to increase the fertility of chicken, but also helped control and monitor these structures. By placing skeletal remains of important and high ranking people inside *hare moa*, physical, spiritual and political links were fostered between particular *puoko moa* and particular *hare moa*. These links could have been called upon by elites during first fruit or other ceremonies.

Taheta

Both portable and non-portable *taheta* (water collectors) have been recorded. Most frequently, they are carved into basaltic *papa* (flat lava fields), but at times they are made from large basaltic or scoria stone (*i.e.*, Tahai). Those carved into *papa* are often associated with petroglyphs (Lee 1992). A few cases show that *papa* located directly next to elite houses were carved with *taheta* (*i.e.*, Akahanga).

Although *taheta* fill up naturally with rainfall, water could have been transported from wells or *rano* (fresh water lakes) in gourds or other vessels and put into *taheta*. In turn, these features formed a type of "water trough" where water could be rationed, used in small-scale horticulture, and distributed to district inhabitants. However, little information exists about *taheta* in ethnographic records and, as few options exist to reconstruct the temporality of *taheta*, it is a resource sector that needs more quantitative and qualitative analysis. However, if the *taheta's* ultimate purpose was to collect and distribute water, it would be considered a crucial resource sector and also would be under the constant monitoring of chiefly and elite retainers, especially when the drought-prone island was without rain for some time (Hunt & Lipo 2001; Ladefoged *et al.* 2005).

Agricultural Terraces

Terraces were made for both habitation structures and agriculture. For this investigation, only terraces covered with agricultural fields are considered as a staple resource sector. It could be argued that there are limited terraces on Rapa Nui because naturally-forming or human made depressions were usually rocked-up to form walls and *manavai*. However, as terraces produced staple resources, these features also were under direct management of the elite and should have similar distributional patterns as other monitored resource sectors.

Analytical Units

Two analytical units are used in this analysis: 500 m and 1,000 m spatial buffers that are centered upon the *ahu* in this investigation. The main purpose of buffers is to help reduce "background noise" or in this particular case "background vision" of areas on the island that have nothing to do with the study areas (*i.e.*, high elevation portions of Poike and Rano Kau). The addition of these visible areas into spatial and statistical analysis would certainly influence results.

Although positioning of some *ahu* may reflect an interest of the elite to control and oversee valuable coastline, maritime resources, and seascapes (Martinsson-Wallin 1994), buffers used in this analysis only focus upon terrestrial areas of the landward side of the platforms. Future work may use visibility analysis to reconstruct patterns of coastal and maritime resource control, where presumably *hare paenga* along with *ahu* played a roll in demarking and monitoring these areas.

It is important that the NWC study area only uses a 500 m buffer due to survey limits of the Pacific Prehistory Project and the fact that there is less inhabitable land from the coast to the inland region. Conversely, the flat, but rising southern coastal plain allows for a great deal of inland habitation. This elongated settlement pattern and the placement of staple resource sectors throughout this pattern prescribe both 500 m and 1,000 m buffers.

Another analytical difference between the northwest and south coast is the number of *mata* that are represented. On the northwest coast, all five *ahu* were under the jurisdiction of Vai Mata. Thus, for this investigation, all *ahu* of that area are considered to represent just one *mata*. On the south coast, each of the three image *ahu* represents a different district center. Thus, for this investigation, each platform (Hanga Poukura) or multiple platform clusters (Vaihu and Akahanga) are considered as different social unities, representing their own territorial district.

In summary, this study focuses on 11 *ahu* (7 image and 4 semipyramidal) and 549 resource sectors found in 4 *mata* districts.

Spatial Analysis – Viewshed Analysis

With the efficiency of GIS applications, computational programs like ESRI's ArcGIS 9.x[3] provide unique spatial tools for researchers. Archaeologists have used one particular GIS based method, viewshed analysis, to examine a whole range of issues dealing with ancient patterns of visibility. The calculation of a viewshed from a single location is a relatively easy raster-based computing problem available in the spatial analyst portion of ArcGIS 9.x. The actual calculation requires that, for each cell in the raster, a straight line be interpolated between the source point (*i.e.*, *ahu* location) and every other cell within a DEM (Digital Elevation Model). The heights of all the cells that occur on the straight line between the source and target cells can then be obtained in order to ascertain whether or not the cell exceeds the height of the 3D line at that point (Wheatly 1995; Wheatly & Gillings 2002). When performed for the entire raster, the result is a binary image with those areas of the landscape that have a direct line of sight from the target cell coded as a 1 and those with no line of sight coded as a 0. ArcMap then displays the spatial information onscreen showing which portions of the landscape are seen and unseen from a source point. This makes it easy to count and calculate the number of resource sectors in both visible and non-visible areas; which sectors are seen the most; and if *ahu* have repeated patterns of overlooking resource sectors.

Patterning in viewshed data becomes more apparent when the results of multiple viewsheds are explored together. Multiple viewshed analysis compares the output from many viewsheds resulting in a single raster representing the visibility from a number of observer points in an area (Wheatley 2004). This method can count, for example, the number of total visible resources per *mata* territory.

Statistical Analysis – Chi-Square (x^2)

In order to evaluate the occurrence of the resource sectors within and outside visible and non-visible areas of *ahu* and to see if their distribution is statistically expected, chi-square is used. "Chi-square can be used as a test of the goodness of fit of an observed set of frequencies produced by a sample investigation to a theoretical frequency distribution" (Ebdon 1985:66) created by the formula:

$$\chi^2 = \sum \frac{d^2}{e}$$

where x^2 is the symbol of chi-square, d is the difference between the observed and the expected frequency for each category, and e is the expected frequency for each category. For more efficient and valid results, the statistical program SPSS[4] was used to calculate x^2. For this investigation, the level of significance was set at 0.05, the generally used limit value (Ebdon 1985; Drennan 1996). A large chi-square (>0.05) suggests that there is a large amount of difference between the observed and expected frequencies and would allow a hypothesis to be rejected. On the other hand, a low chi-square (<0.05) suggests that there is a small amount of difference between the observed and expected frequencies and would allow a hypothesis to be accepted and/or considered statistically significant.

Hypotheses

Two hypotheses are put forward to test the frequency of resource sectors found within the area visible by single and multiple *ahu* viewsheds.

Hypothesis 1 (H^1): There should be more visible resource sectors within the viewshed area of image *ahu.*

Hypothesis 2 (H^2): There should be less visible resource sectors within the viewshed area of semipyramidal *ahu.*

Table 1. Test Results from the Northwest Coast

Ahu	*Visible Recourse Sectors*	*Non-Visible Resource Sectors*	*% of Visible Resource Sectors*	x^2	*Test Result*
Vai Mata	37	8	82%	0.022	Supports H^1
Motu Tevaka	25	41	39%	0.007	–
Maitaki te Moa	25	37	40%	0.16	–
O'Hurari	5	15	25%	0.002	–
Ahu Vai Mata	97	32	75%	0	Supports H^1
Taka Para Puna	17	38	30%	0.005	Supports H^2

Table 2. Test Results from the Southern Coast

Ahu	*Visible Recourse Sectors*	*Non-Visible Resource Sectors*	*% of Visible Resource Sectors*	x^2	*Test Result*
Poukura 500m	11	12	48%	0.233	–
Poukura 1000m	82	58	59%	0	Supports H^1
Hanga Te'e 500m	37	10	79%	0.662	Supports H^1
Hanga Te'e 1000m	134	65	67%	0.04	Supports H^1
Akahanga 500m	32	13	71%	0.208	Supports H^1
Akahanga 1000m	83	46	64%	0	Supports H^1
Semi pyramidal 5-153	20	103	16%	0	Supports H^2
Semi pyramidal 6-141	60	98	38%	0	Supports H^2
Semi pyramidal 6-256	40	186	17%	0	Supports H^2

Results

Below are the results of the spatial and statistical analysis: (1) Two tables listing NWC and SC *ahu*, number of visible and non-visible resource sectors, percentage of visible resource sectors, a chi-square tabulation, and a test result. (2) A review of the results from both study areas. (3) Selected single or multiple viewshed maps with visible areas from the *ahu* or *ahu* cluster, analytical zones (500 m and 1000 m) and resource sectors. (4) Selected graphs illustrating the type of resource and the number of times it is found in a visible or non-visible area.

Northwest Coast

Of the six spatial and statistical analyses that were calculated on the NWC *ahu*, two tests supported H^1 while one test supported H^2. As the district center and one of the largest platforms on the far northwest coast, it seems logical to posit that Ahu Vai Mata, with its considerable elite presence (Stevenson 2002), should illustrate the best evidence for resource sector overseeing. And, 82% of all sectors within the 500 m buffer were under the visibility of Ahu Vai Mata (Figure 1). This included 22 *umu pae / hare umu* and 10 *manavai* (Table 3). This suggests that the placement of resource sectors in the landscape around Ahu Vai Mata was not random (x^2=.022), but likely reflects a pattern where sectors were positioned and installed to be intervisible.

Table 3. Visible and Non-Visible Resource Sectors from Ahu Vai Mata.

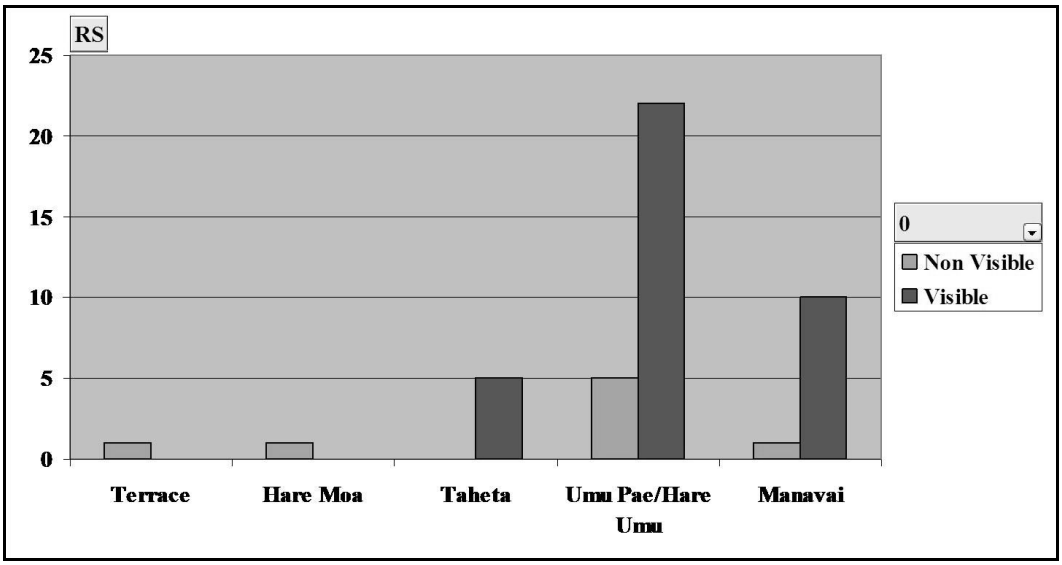
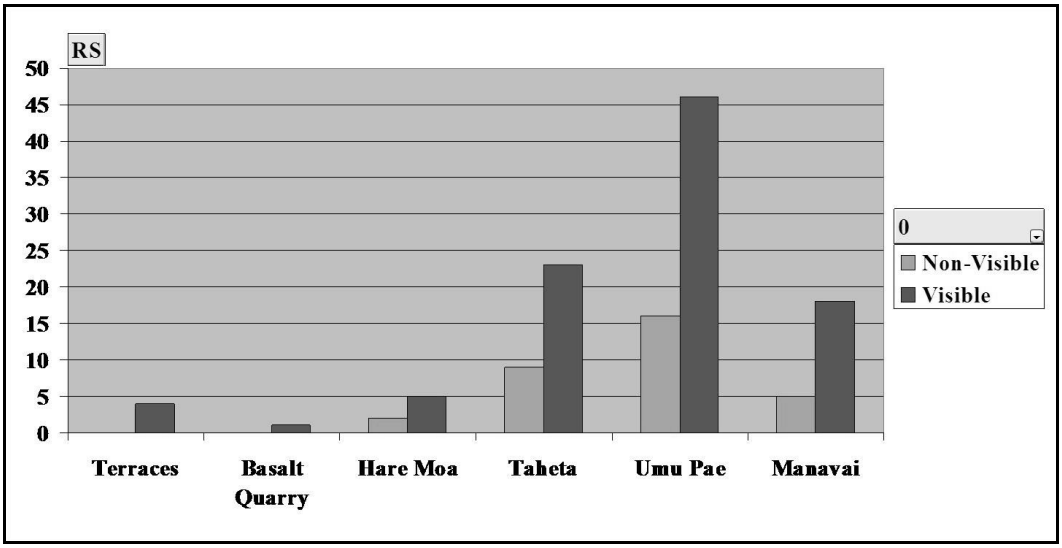


Table 4. Visible and Non-Visible Resource Sectors from the Vai Mata District.



Results from the other image *ahu* in the Vai Mata district did not present evidence for the overseeing of resource sectors. This suggests that there may be a larger pattern on the NWC where multiple *ahu* were being used in an accumulated attempt to overlook larger areas of the Vai Mata district. And, when a multiple viewshed was calculated from all image *ahu* in the district, 75% of all resource sectors within the study area were under the visibility of at least one image *ahu* (Figure 2). Therefore, evidence from the Ahu Vai Mata district suggests that the placement of resource sectors in the whole territory was not a random process (x^2=.005), but likely reflects a pattern where elite living at Vai Mata used image *ahu* to help denote the placement of resource sectors.

As hypothesized, *umu pae / hare umu* were most visible (n=46) within the NWC study area (Table 4). Statistically, 74% percent of all *umu pae / hare umu* were under the visibility of at least one image *ahu*. Also, results from semipyramidal Ahu Taka Para Puna supported H². Only 30% of the resource sectors within the 500m buffer were found intervisible with this *ahu*. Therefore, the placement of resource sectors around semipyramidal Ahu Taka Para Puna was not a random process (x^2=.005), but reflects a pattern where sectors found around this *ahu* were not positioned to be intervisible.

Southern Coast

Of the 9 spatial and statistical analyses that were calculated about SC *ahu*, 5 tests supported H¹ while 3 supported H². As southern coast district centers, it seems logical to imagine that Ahu Hanga Poukura, the Vaihu complex, and the Akahanga complex, with their considerable elite presence (Stevenson 1986, 2002), should illustrate the best evidence for resource sector overseeing. As such, 48% of all resource sectors within the 500 m buffer were under the visibility of Hanga Poukura, while 59% were visible within the 1000 m buffer (Figure 3). This evidence suggests that the placement of resource sectors in the landscape around Hanga Poukura was not a random process (x^2=.000 [at 1000 m]), but possibly reflects a pattern where sectors were positioned and installed to be intervisible with this *ahu*. At the Vaihu complex, a more convincing 79% of all resource sectors were within the visibility of the 500 m buffer, while 67% were visible within the 1000 m buffer (Figure 4). This suggests that the placement of resource sectors in the landscape around the Vaihu complex was not random (x^2=.035 at 1000 m]), but

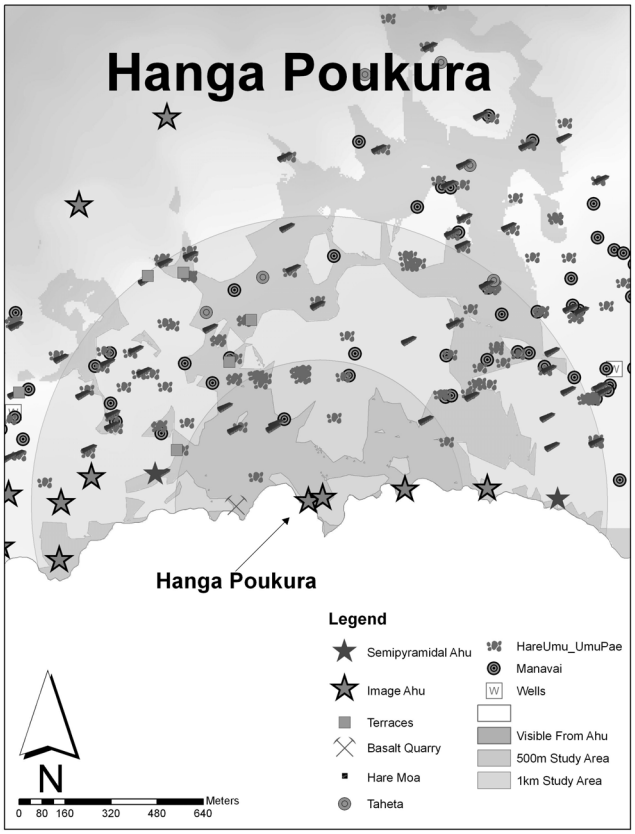


Figure 3. Single Viewshed from Hanga Poukura (500-1,000 m).

reflects a pattern where sectors were positioned and installed to be intervisible with this *ahu* complex. At the Akahanga complex, 71% of all resource sectors were within the visibility of the 500 m buffer, while 64% were visible within the 1000 m

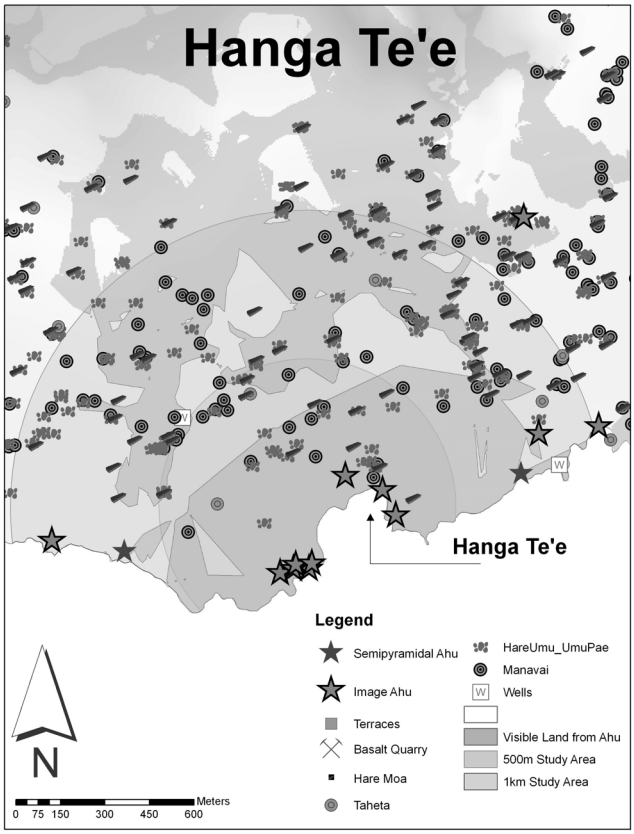


Figure 4. Multiple Viewshed from Vaihu (500-1,000 m).

buffer (Figure 5). This suggests that the placement of resource sectors in the landscape around Akahanga was not a random process (x^2=.000 [at 1000 m]), but reflects a pattern where sectors were positioned and installed to be intervisible. Interestingly, note that the easternmost cluster of resource sectors that falls perfectly within the visualscape of the Akahanga complex (Figure 5).

As hypothesized, *umu pae / hare umu* are the most visible resource sector (n=133) within the south coast study area. Statistically, 70% percent of all *umu pae / hare umu* are under the visibility of at least one district *ahu* or *ahu* cluster (Tables 5 - 7). Also, all three results from semipyramidal *ahu* supported H². Within the 1000 m buffer of Ahu 5-153, only 16% of resource sectors were found to be intervisible. This suggests that the placement of resource sectors around this platform was not a random process (x^2=.007), but likely reflects a pattern where sectors were not positioned to be intervisible. Within the 1000 m buffer of Ahu 6-141, only 38% of resource sectors were found to be intervisible. In other words, the placement of resource sectors around this platform was not a random process (x^2=.000), but reflects a pattern where sectors were not positioned to be intervisible. Within the 1000m buffer of Ahu 6-256, only 17% of resource sectors were intervisible, suggesting that the placement of resource sectors was not a random process (x^2=.000), but reflects a pattern where sectors were not positioned to be intervisible.

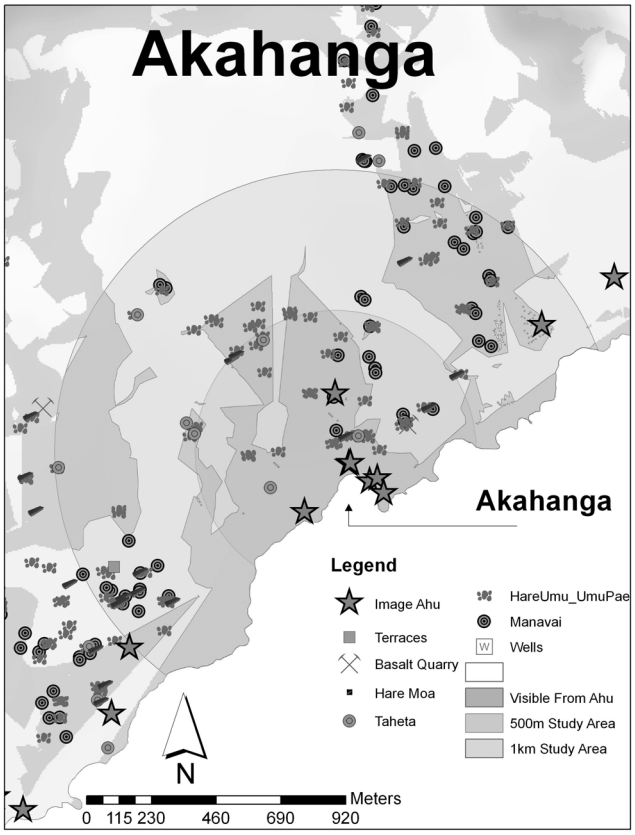


Figure 5. Multiple Viewshed from Akahanga (500-1,000 m).

Discussion

> There is no need for arms, physical violence, material constraints. Just a gaze. An inspecting gaze, a gaze in which each individual under its weight will end by interiorizing to the point that he is his [*sic*] own overseer, each individual thus exercising this surveillance over, and against, himself [*sic*]. A superb formula: power exercised continuously and for what turns out to be a minimal cost. (Foucault 1980:155).

While criticism has been put forward by Cosgrove (1984) and Thomas (1993) that interpretations made by landscape archaeologists "seem to be seeking to monitor and discipline the past" (Fleming 2006), my results emphasize Foucauldian ideas of surveillance and enforce the notion of elite monitoring over Rapa Nui's ancient political economy. While Foucault's work (1977, 1980) focused on the contemporary penal system and how the panoptic captured best the principles and techniques of control in the modern disciplinary society, other authors have noted that such surveillance was used as a mechanism for power in the past. For example, Yekutieli (2006) uses a landscape approach to present two case studies from the southern Judean Desert (Israel). Here, the close relationship between panoptical arrangements and power in a quarry allowed elite Romans to manipulate the political landscape in order to oversee non-elite Jews and make them work the quarry. From an ostensible lookout crevice, a supervisor could boost his domination over a group of workers by keeping a constant gaze over them. In his second case, Yekutieli illustrates that at a crucial juxtaposition for transport between a high ridge ascent and the Nahal Hemar drainage basin, the unequal visibility created by the ascent allowed a small group of guards to monitor large numbers of road users. In turn, this vista had an effect on those road users under the gaze.

> The notion of being observed by someone in power has its effect... Even if there is only one observer or none at all, the observed behavior is altered: depending on who they are, they might be either anxious or reassured by the possibility that a powerful eye watches [them]. (Yekutieli 2006:83)

To better understand elite-controled landscapes, Yekutieli stresses the need for an archaeological approach that does not limit itself to the mere description and dating of sites. He argues that a landscape perspective can best assess the economic, social, political, and religious activities that created the archaeological record, especially patterns that can be identified through the analysis of the viewshed or line of sight. Yekutieli states that it is best to shed the archaeological practice of only looking at sites from the outside in, and reverse the prospect to consider what might have been in view from the inside out. Thus, instead of looking inwards toward Polynesian monumental architecture to identify temporal diagnostic attributes or stylistic differences between social districts, it may be worthwhile to look outwards from *marae* or *ahu* to assess how the visualscape of these monuments influenced the spatial positioning of economic, political, social, and religious activities in the wider landscape. Work by Emory (1943:66-68) on *marae* from the Tuamotus highlights the social reality of this inside-out orientation.

> [A] tribe held an island or a certain portion of an island in common but in the title of its chief, who could say, I turn my back in one direction [looking towards the *marae*], I turn my back in the opposite direction, all that I see belongs to me.

The archaeological task then becomes how to spatially and statistically quantify what chiefs and elite members saw when they looked away from monumental features. This includes how Rapa Nui's district *ahu* were used as panoptic points to allow a small number of *ariki* and *honui* to oversee *mata* land, resource sectors, and corporate members.

Rapa Nui archaeologists have established that some *ahu* were placed to be "more visible" in the island's ancient landscape (Martinsson-Wallin & Wallin 2000:39), making platforms more prominent, and also creating larger visualscapes from which chiefly and elite retainers could better monitor corporate members, resource sectors, and *mata* territory.

It has also been established that an elite class was overseeing resource production in the upland regions of the island. Here, monitoring was accomplished through an elite-

Table 5. Visible and Non-Visible Resource Sectors from Hanga Poukura (1,000 m).

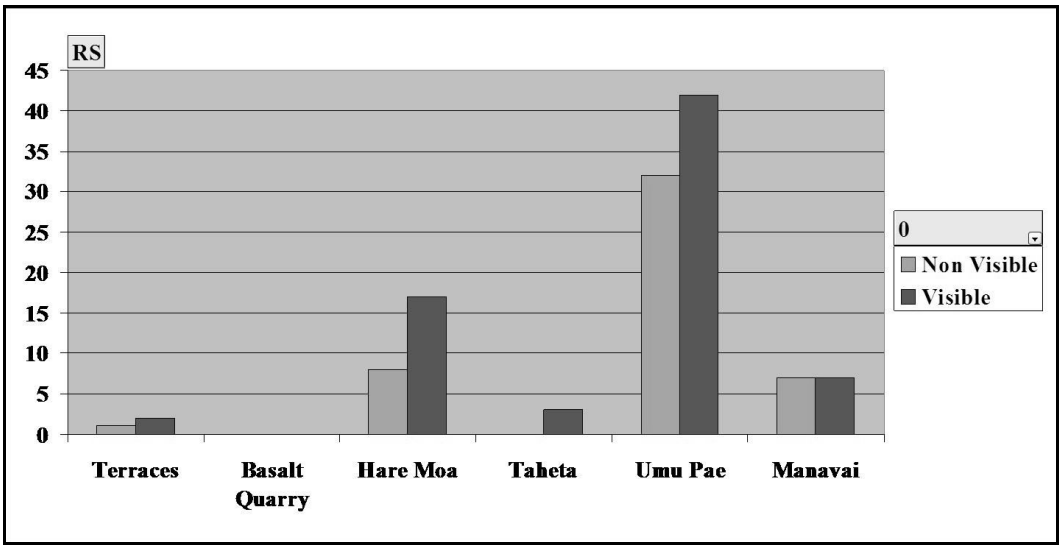
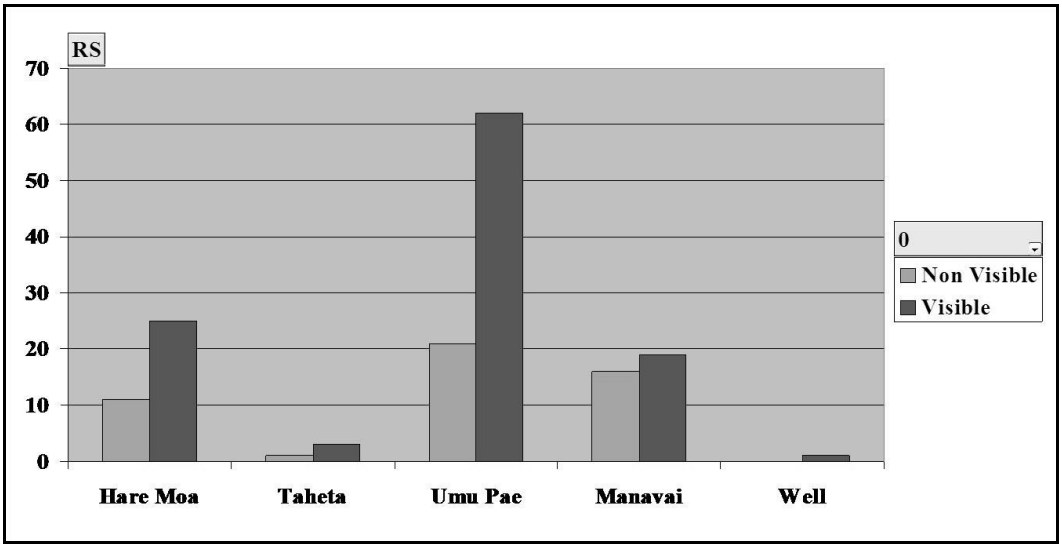


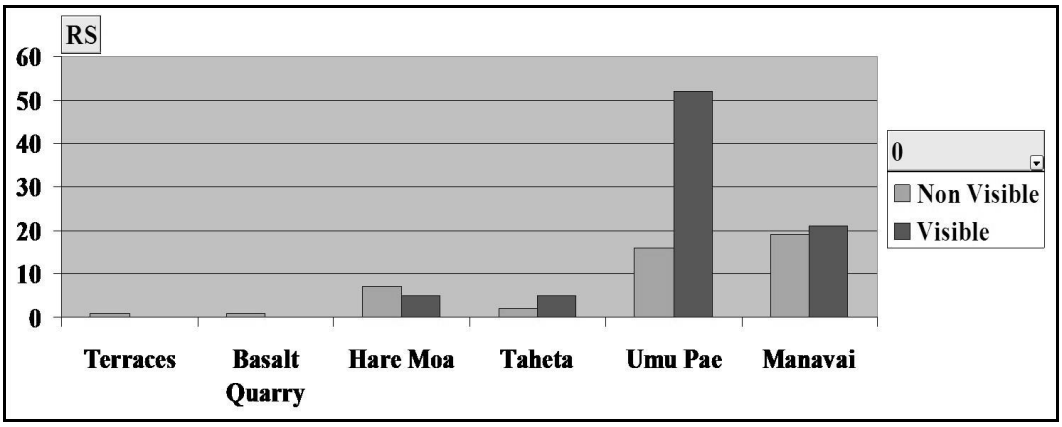
Table 6. Visible and Non-Visible Resource Sectors from Vaihu (1,000 m).



built landscape that used small *ahu*, *hare paenga*, and rectangular houses as lookouts. In addition, other visible archaeological features such as *pipi horeko* (stone cairns [Vargas *et al.* 2006]), petroglyph complexes (Lee 1992), and natural features such as *karava* (overhangs), *puku* (outcrops) and caves (*ana*, *ana kionga*) may also have been used to demarcate an elite-built landscape and to denote valuable agricultural planting strategies.

The spatial and statistical analyses of this research quantifiably illustrate that there exists a perceptible pattern with regard to the placement of staple resource sectors within areas visible by district *ahu.* I suggest that this pattern reflects a conscious attempt by Rapanui elite to install resource sectors within the visualscape of image *ahu*. On one hand, this inter-visibility effectively helped the elite to monitor *manavai*, *umu pae / hare umu*, *hare moa*, *taheta* and agricultural terraces while, at the same time, effectively reminded *mata* inhabitants of corporate work responsibilities. In turn, resources produced in monitored sectors were protected by chiefly *tapu* and appropriated by elites through mechanisms such as first-fruit ceremonies. With control over the staple resource economy, chiefs then had a surplus to fund the construction and maintenance of the monumental works for which Rapa Nui is so famous.

Table 7. Visible and Non-Visible Resource Sectors from Akahanga (1,000 m).



The construction of *pukao*-topped *moai* further helped the elite to retain control over the political economy and *mata* territory by demarking land, denoting resource sectors, and reminding district inhabitants of elite hegemony. This is important because, unlike other Polynesian islands such as the Marquesas and Society Islands that have natural borders formed by the physical landscape (valleys, gullies, *etc.*), Rapa Nui's slow rising coastal plains prescribed a system where *ariki* and *honui* needed monumental elaboration to overtly denote corporate land, inhabitants, and interests. And, in the view of Kirch (1990b:206), as monumental architecture of the more stratified Polynesian societies "played a key role" in marking "chiefly dominance and hegemony", Rapa Nui's prolific number of *ahu* and elite-related features found throughout the island speak to the amount of power and influence *ariki* and *honui* had over the Rapanui society during the chiefdom integration period.

The high visibility of *umu pae* / *hare umu* suggests that, in an attempt to build prestige among elite and feed district inhabitants involved in corporate works, chiefly retainers needed to keep an eye over this very important resource sector. Perhaps the best way to keep a panoptic eye over the cooked staple resources that fueled Rapa Nui's ancient society was to use *moai* on top of *ahu* as a constant reminder of past and present chiefly rule over territory, and elite control over the island's staple economy. In fact, Rapa Nui archaeologists have already argued that the position of *moai* on top of *ahu* looking inland was indeed to control land and remind inland inhabitants of an elite hegemony (Martinsson-Wallin 1994; Van Tilburg 1994).

However, although the *ahu* - *moai* complex was imbued with a great deal of spiritual, ideological, and political power, they were also effectively used as durable symbols for economic control. This control, when coupled with the spiritual, ideological and political power of district *ahu*, afforded *ariki* and *honui* the necessary resources and a permanent location from which they could sanction ancestral worship, enforce hereditary land use rights, command corporate work strategies, and allocate control of the political economy to the Rapanui elite. Together, this hegemonic control over many aspects of the ancient society undoubtedly helped Rapanui chiefs and elite to influence the island's prehistoric socio-political trajectory.

Interestingly, the word for eye in Rapanui is *mata*, the same as the word for the corporate group or clan. Van Tilburg (1994) questioned why this connection of *mata* for eye and clan exists. It may be related to how the *mata* of the *moai* was monitoring the *mata* of the district. Could it be that the all-seeing *mata* of the ancestors, within in the *aringa ora* (living face) of the *moai*, was effectively overseeing, controlling and maintaining the fertility of *mata* resource sectors; similar to the job of living *ariki* and *honui*? Could it be that on Rapa Nui, we have an ancient Orwellian case of big *moai* is watching you? I imagine that everyday a corporate member tended a *manavai,* retrieved chickens from a *hare moa,* and / or ate from an *umu pae*, they would have been reminded of their subordinate role by the elite-built political landscape. The constant gaze from the ancestral past and hegemonic present, created a "superb formula, power exercised continuously and for what turn[ed] out to be a minimal cost" (Foucault 1980: 155).

ONTOLOGICAL CONSIDERATIONS

There are several methodological and ontological particulars that should be considered to improve the epistemological validity of this investigation:

(1) Little temporal consideration has been made with regard to the analysis of *ahu* and resource sectors. In fact, I have considered all *ahu* and resource sectors contemporaneous for the purpose of analysis. In reality, this is not the case, as some features were undoubtedly from much later periods. Future work should incorporate dates from, for example, *umu pae / hare umu* to see when earth ovens began to be installed outside the visibility of *ahu,* for this may not only represent a change in control over resource sectors, but also in Rapanui's ancient socio-political system.

(2) Although a good percentage of resource sectors were

found within the range of visibility of district *ahu*, what did sectors outside the visibility of *ahu* represent? What did patterns of non-visibility mean for Rapa Nui's ancient political economy? Did the installation of non-visible resources around *ahu* represent later occupational contexts when the *ahu* were allegedly not used as ceremonial structures after a "desanctification" of coastal areas around the 1600's (Stevenson 1984, 1997; Vargas 1998)? Or, did non-visible resource sectors represent features that were not under the surveillance of district *ahu*? Could it be that these sectors were under the vigilance of other features in the political landscape including smaller *ahu*, *hare paenga*, *pipi horeko*, and/or petroglyphs? I would argue so, and suggest that future viewshed analysis consider the visualscapes of these other features.

(3) Since Schiffer's publications (1976, 1987), archaeological investigations must consider the effects of post-depositional processes on the archaeological record. On Rapa Nui, many activities changed the original location of resource sectors. These include the scavenging of stones to create new features (*e.g.*, fences for Williamson Balfour Agrocomercial Ltda. [Routledge 1919; Métraux 1940]), the mechanical clearing of the surface for fill used in airport runway construction (*e.g.*, Hanga Poukura and Vaihu [McCoy 1976; Stevenson 2002]), and the pressure created by tourism and animal "ranching" on archaeological sites (Torres *pers. comm.*). These and other unaccounted processes could have altered the spatial integrity of resource sectors.

(4) This investigation did not take into consideration that Rapa Nui was once covered by millions of palm trees, smaller trees, and scrub bushes (Flenley 1993; Grau 1998; Orliac 2000). If forests still existed when resource sectors were installed, trees may have blocked intervisibility and reduced the field-of-view. While forests were likely cleared after initial colonization for agriculture, boat making, firewood, human cremation, stone transport, and perhaps to improve the visualscapes provided by district *ahu,* future models concerning *ahu* visibility could incorporate the palaeo-environment to see how it possibly influenced the placement of *ahu* and resource sectors.

If future investigations consider these methodological and ontological particulars, it will provide a better understanding of how visibility played a role in the placement of Rapa Nui's archaeological features.

Conclusion

Rapa Nui has been the focus of intense academic debate. Two of the arguments consider when the island was first settled, and the role humans played in the island's proposed "ecocide". These debates focus on the extremes of the island's (pre)historic timeline. Logically then, questions arise such as: (a) What happened during the *intermediate* period of Rapa Nui's prehistoric timeline, an epoch which saw a level of megalithic construction not previously seen in the Pacific? (b) How were the notoriously isolated island inhabitants and celebrated stone carvers organized socio-politically to be able to construct the more than 20,000 features that are found throughout the island? (c) How did chiefly and elite retainers manipulate the political economy to fund and construct the monumental architecture for which the island is so famous?

Using viewshed and chi-square analyses to spatially quantify how chiefly and elite retainers monitored and oversaw resource sectors on coastal regions, I have shown how *manavai*, *umu pae / hare umu, hare moa, taheta,* and agricultural terraces were installed within district *ahu* visualscapes to facilitate monitoring and overseeing of resource production. This positioning also helped to create a political landscape that expressed chiefly hegemony. By using elements such as chiefly *mana* and *tapu*, first fruits ceremonies, and corporate strategies, Rapanui chiefs and elites maintained significant control over the island's staple resource economy.

Drawing upon many lines of evidence, this investigation joins earlier works regarding how chiefly and elite retainers manipulated Rapa Nui's ancient political economy by showing how the island was socio-politically organized and controlled during the chiefdom integration period.

Acknowledgements

The author would like to thank Margara González Pérez, Jerónimo Simpson González, Dale F. Simpson Sr., Charlene R. Simpson Kobes, Christina Ignatius, Marcial González Correa, Isabel Margarita Pérez, Thegn Ladefoged, Melinda Allen, Geoff Irwin, Harry Allen, Simon Holdaway, Mark Busse, Peter Sheppard, Brett Shepardson, Mara Mulrooney, Ben Pick, Alex Baer, Francisco Torres, Claudia Peñafiel, Chris Stevenson, Sonia Haoa, Claudio Cristino, Patricia Vargas, Terry Hunt, Alex Morrison, John Terrell, Chris Philipp, J.P. Brown, Georgia Lee, and the people of Rapa Nui!

Notes

1 Although see <http://www.anthropology.hawaii.edu/projects/ppp/report/site1.htm> for the 2001 University of Hawai'i site report from Quadrangle 26.
2 http://www.systat.com
3 http://www.esri.com/software/arcgis/index.html
4 http://www.spss.com/spss/index.htm

References

Altman, A. 2004. *Early Visitors to Easter Island, 1864-1877: The Reports of Eugene Eyraud, Hippolyte Roussel, Pierre Loti, and Alphonse Pinart*. Los Osos: Easter Island Foundation.

Ayres, W. 1973. The Cultural Context of Easter Island's Religious Structures. PhD dissertation, Tulane University.

Bahn, P. & J. Flenley. 1992. *Easter Island, Earth Island*. London: Thames and Hudson.

Baker, P. 1993. Archaeological Stone of Easter Island. *Geoarchaeology,* 8:127-39.

Baker, P. 1998. Petrological Factors Influencing the Utilization of Stone on Easter Island. *Easter Island in*

Pacific Context. (G. Lee, C. Stevenson, & F.J. Morin, eds.). Los Osos: Easter Island Foundation.

Beardsley, F. 1990. Spatial Analysis of Platform *Ahu* on Easter Island. PhD dissertation, University of Oregon.

Blanton, R.; S. Feinman; S. Kowalewski; & P. Peregrine. 1996. A Dual Processual Theory for the Evolution of Mesoamerican Civilization. *Current Anthropology* 37:1-14.

Brookfield, H. 1972. Intensification and Disintensification in Pacific Agriculture: A Theoretical Approach. *Pacific Viewpoint* 13:30-48.

Brumfield, E. & T. Earle. 1987. Specialization, Exchange and Complex Societies: An Introduction. *Specialization, Exchange, and Complex Societies* (T. Earle & E. Brumfield, eds.). Cambridge: Cambridge University Press.

Budd, R. & P. Vargas. 1993. *Arquitectura Prehistórica de Isla de Pascua*. Santiago: Universidad de Chile. Instituto de Estudios Isla de Pascua.

Carneiro, R. 1967. On the Relationship Between Size of Population and Complexity of Social Organization. *Southwestern Journal of Anthropology* 23:234-43.

Cosgrove, D. 1984. *Social Formation and Symbolic Landscape*. London: Croom Helm.

Cristino, C.; P. Vargas; & R. Izaurieta. 1981. *Atlas Arqueológico de Isla de Pascua*. Facilidad de Arquitectura - Urbanismo. Santiago: Instituto de Estudios Universidad de Chile.

Cristino, C.; P. Vargas; & R. Izaurieta. 1985. Prospección Arqueológica de la Costa Norte de Isla de Pascua Cuadrángulo 33 Hanga O Teo. Santiago.

D'Altroy, T. & T. Earle. 1985. Staple Finance, Wealth Finance, and Storage in the Inka Political Economy. *Current Anthropology* 26(2):187-206.

Diamond, J. 2005. *Collapse.* Oxford: Oxbow.

DiSalvo, L.; J. Randall; & A. Cea. 1993. The Marine Fauna of Rapanui: Past and Present **in** *Easter Island Studies* (S. Fischer, ed.). Oxford: Oxbow Books.

Drennan, R. 1996. *Statistics for Archaeologists: A Commonsense Approach*. New York: Plenum Press.

Earle, T. 1997. *How Chiefs Come to Power: The Political Economy in Prehistory*. Stanford: Stanford University Press.

Earle, T. 2002. *Bronze Age Economics: The Beginnings of Political Economies*. Cambridge: Westview Press.

Ebdon, D. 1985. *Statistics in Geography*. New York: Basil Blackwell.

Emory, K. 1943. Polynesian Stone Remains **in** *Studies in the Anthropology of Oceania and Asia* (C. Coon, ed.). Papers of the Peabody Museum of American Archaeology and Ethnology, Vol. 20. Cambridge: The Museum.

Englert, S. 1970. *Island at the Center of the World: New Light on Easter Island*. New York: Scribner.

Englert, S. 1974. *La Tierra de Hotu Matu'a: Historia y Etnología de la Isla de Pascua*. Santiago de Chile: Editorial Universitaria.

Fedorova, I. 1990. Ethnological and Folklore Data in the Symbolic Interpretation of Easter Island Art Objects **in** *Current Easter Island Studies* (I. Fedorova, ed.). Frankfurt: Courier Forsch-Inst.

Firth, R. 1967. *The Work of the Gods in Tikopia*. New York: MacMillan

Flannery, K. 1972. The Cultural Evolution of Civilization. *Annual Review of Ecology and Systematics* 3:339-426.

Fleming, A. 2006. Post-processual Landscape Archaeology: A Critique. *Cambridge Archaeological Journal* 16(3):267-80.

Flenley, J. 1993. The Palaeoecology of Easter Island and its Ecological Disaster **in** *Easter Island Studies. Contribution to the History of Rapanui in Memory of W. T. Mulloy* (S. Fischer, ed.); pp.27-45. Oxford: Oxbow Books.

Foucault, M. 1977. *Discipline and Punish: The Birth of the Prison.* New York: Pantheon.

Foucault, M. 1980. The Eye of Power **in** *Power / Knowledge* (C. Cordon, ed.). New York: Pantheon.

Geiseler, W. 1882. Geiseler's Easter Island Report: An 1880s Anthropological Account. *Asian and Pacific Archaeology Series No. 12*. (W. Ayres, ed.). Honolulu: Social Science Research Institute University of Hawai'i at Manoa / University of Hawai'i Press.

Goldman, I. 1970. *Ancient Polynesian Society*. Chicago: University of Chicago Press.

Grau, J. 1998. The *Jubaea* Palm, Key in the Transportation of *Moai* on Easter Island **in** *Easter Island in Pacific Context South Seas Symposium* (G.Lee, C. M. Stevenson, & F.J. Morin, eds.); pp.120-124. Los Osos: Easter Island Foundation.

Graves, M. & M. Sweeny. 1993. Ritual Behavior and Ceremonial Structures in Eastern Polynesia: Changing Perspectives on Archaeological Variability **in** *The Evolution and Organization of Prehistoric Society in Polynesia*. (M. Graves & C. Green, eds.). Auckland: New Zealand Archaeological Association, Monograph 19.

Handy, E. & M. Pukui. 1972. *The Polynesian Family System in Ka'u Hawai'i*. Rutland: Charles E. Tuttle and Company.

Heyerdahl, T. 1961. An Introduction to Easter Island **in** *Reports of the Norwegian Archaeological Expedition to Easter Island and the East Pacific* (T. Heyerdahl & E. Ferdon, eds.). Santa Fe: Monographs of the School of American Research and the Museum of New Mexico.

Heyerdahl, T. & E. Ferdon Jr. (eds.). 1961. *Reports of the Norwegian Archaeological Expedition to Easter Island and the East Pacific*. Monographs of the School of American Research and the Museum of New Mexico. London: Allen and Unwin.

Hotus, A. *et al.* 1988. *Te Mau Hatu'o Rapa Nui* (A. Hotus, ed.). Santiago, Chile: Simon Bolivar.

Howard, N. 2007. Socio-political Complexity and Elite Houses in Vaitea Rapa Nui. M.A. thesis, University of Auckland.

Hunt, T. & C. Lipo. 2001. Cultural Elaboration and Uncertainty in Polynesia **in** *Pacific 2000: Proceedings of*

the Fifth International Conference on Easter Island and the Pacific (C.M. Stevenson, G. Lee, & F.J. Morin, eds.); pp.103-115. Los Osos: Easter Island Foundation.

Johnson, A. 1978. Information Sources and the Development of Decision-making Organizations **in** *Social Archaeology: Beyond Subsistence and Dating* (C. Redman, E. Curtis, W. Langhome, N. Veraggi, & J. Wanser (eds.). New York: Academia Press.

Johnson, A. & T. Earle. 2000. *The Evolution of Human Societies: From Foraging Group to Agrarian State*. Stanford: Stanford University Press.

Kirch, P. 1984. *The Evolution of the Polynesian Chiefdoms*. Cambridge: Cambridge University Press.

Kirch, P. 1990a. The Evolution of Socio-political Complexity in Prehistoric Hawaii: An Assessment of the Archaeological Evidence. *Journal of World Prehistory* 4(3):311-45.

Kirch, P. 1990b. Monumental Architecture and Power in Polynesian Chiefdoms: A Comparison of Tonga and Hawaii. *World Archaeology* 22(2):206-22.

Kirch, P. 2000. *On the Road of the Winds: An Archaeological History of the Pacific Islands before European Contact*. Berkeley: University of California Press.

Kolb, M. 1991. Social Power, Chiefly Authority, and Ceremonial Architecture in an Island Polity, Maui, Hawaii. PhD dissertation, University of California.

Kolb, M. 1994. Ritual Activity and Chiefly Economy at an Upland Religious Site on Maui, Hawai'i. *Journal of Field Archaeology* 21(4):417-36.

La Pérouse, J.F. de Galaup, Compte de. 1797. *A Voyage Round the World Performed in the Years 1785, 1786, 1787 and 1878*. London: A. Hamilton.

Ladefoged, T.; C. Stevenson; P. Vitousek; & O.Chadwick. 2005. Soil Nnutrient Depletion and the Collapse of Rapa Nui Society. *Rapa Nui Journal* 19(2):100-105.

Lavachery, H. 1939. *Les Pétroglyphes de l'Île de Pâques.* Ouvrage Publié Avec le Concours de la Fondation Universitaire de Belgique. Anvers: De Sikkel.

Lee, G. 1992. *Rock Art of Easter Island: Symbols of Power, Prayers to the Gods*. Los Angeles: Institute of Archaeology, University of California.

Llobera, M. 2003. Extending GIS-based Visual Analysis: The Concept of *Visualscapes*. *International Journal of Geographical Information Science* 17(1): 25-48.

Love, C. 1993. Easter Island Ahu Revisited **in** *Easter Island Studies: Contributions to the History of Rapanui in Memory of William T. Mulloy* (S. Fischer, ed.). Oxford: Oxbow Books.

Martinsson-Wallin, H. 1994. *Ahu – The Ceremonial Stone Structures of Easter Island*. Uppsala: Societas Archaeologica Upsaliensis, Vol. 19.

Martinsson-Wallin, H. & P. Wallin. 2000. Ahu and Settlement: Archaeological Excavations at 'Anakena and La Pérouse. **in** *Easter Island Archaeology* (C.M. Stevenson and W. Ayres, eds.); pp.27-44. Los Osos: Easter Island Foundation.

McCoy, P.C. 1976. *Easter Island Settlement Patterns in the Late Prehistoric and Protohistoric Periods*. Washington, DC: Easter Island Committee, International Fund for Monuments, Inc.

Métraux, A. 1940. *Ethnology of Easter Island*. Honolulu: Bernice P. Bishop Museum.

Métraux, A. 1957. *Easter Island : A Stone-age Civilization of the Pacific*. London: Deutsch.

Mulloy, W. & G. Figueroa. 1978. *The A Kivi-Vai Teka Complex and its Relationship to Easter Island Architectural Prehistory*. Honolulu: University of Hawai'i at Manoa.

Mulloy, W. 1997. *Bulletin 3: Preliminary Report of the Restoration of Ahu Huri a Urenga and Two Unnamed* Ahu *at Hanga Kio'e. The Easter Island Bulletins of William Mulloy* (P. McCoy, ed.). Los Osos: Easter Island Foundation.

Orliac, C. 2000. The Woody Vegetation of Easter Island Between the Early 14th and the Mid 17th Centuries AD **in** *Easter Island Archaeology* (W. Ayres & C. Stevenson, eds.); pp.211-220. Los Osos: Easter Island Foundation.

Peebles, C. and M. Kus. 1977. Some Archaeological Correlates of Ranked Societies. *American Antiquity* 42:421-48.

Routledge, K. 1919. *The Mystery of Easter Island: The Story of an Expedition*. London: Hazell, Watson, and Viney.

Sahlins, M. 1958. *Social Stratification in Polynesia*. Seattle: University of Washington Press.

Sahlins, M. 1972. *Stone Age Economics*. Chicago: Aldine-Atherton.

Schiffer, M. 1976. *Behavioral Archaeology*. New York: Academic Press.

Schiffer, M. 1987. *Formational Processes of the Archaeological Record*. Albuquerque: University of New Mexico Press.

Seelenfreund, H. 2000. Easter Island Burial Practices **in** *Easter Island Archaeology* (W. Ayers & C. Stevenson, eds.); pp.81-102. Los Osos: Easter Island Foundation.

Shanks, M. 1997. Foreword. Semiotics of Landscape: Archaeology of Mind **in** *British Archaeological Reports International Series 661* (G. Nash, ed.). Oxford: Archaeopress.

Shepardson, B. 2005. The Role of Rapa Nui (Easter Island) Statuary as Territorial Boundary Markers. *Antiquity* 79(303):169-78.

Shore, B. 1989. Mana and Tapu **in** *Developments in Polynesian Ethnology*. (A. Howard, ed.). Honolulu: University of Hawai'i Press.

Stevenson, C. 1984. Corporate Descent Group Structure in Easter Island Prehistory. PhD dissertation, Pennsylvania State University.

Stevenson, C. 1986. The Socio-political Structure of the Southern Coastal Area of Easter Island **in** *The Evolution of Island Societies* (P. Kirch, ed.); pp.69-77. Cambridge: Cambridge University Press.

Stevenson, C. 1997. *Archaeological Investigations on Easter Island: Maunga Tari, An Upland Agricultural Complex*. Los Osos: Bearsville and Cloud Mountain Press.

Stevenson, C. 2002. Territorial Divisions on Easter Island in the Sixteenth Century: Evidence from the Distribution of Ceremonial Architecture **in** *Pacific Landscapes: Archaeological Approaches* (T. Ladefoged & M. Graves, eds.); pp.313-229. Los Osos: Easter Island Foundation.

Stevenson, C. & S. Haoa. 1998. Prehistoric Gardening Systems and Agricultural Intensification in the La Pérouse Area of Easter Island **in** *Easter Island in Pacific Context South Seas Symposium: Proceedings of the Fourth International Conference on Easter Island and East Polynesia* (C. Stevenson, G. Lee, & F.J. Morin, eds.). Los Osos: Easter Island Foundation.

Stevenson, C.; J. Wozniak; & S. Haoa. 1999. Prehistoric Agricultural Production on Rapa Nui. *Antiquity* 73:801-812.

Stevenson, C.; T. Ladefoged; S. Haoa; & A. Guerra. 2005. Managed Agricultural Production in the Vaitea Region of Rapa Nui, Chile **in** *The Reñaca Papers. Proceedings of the VI International Conference on Rapa Nui and the Pacific* (C.M. Stevenson, J.M. Ramirez; F.J. Morin; & N. Barbacci, eds.); pp.125-136. Los Osos: Easter Island Foundation.

Stevenson, C. & S. Haoa. 2008. *Prehistoric Rapa Nui Landscape and Settlement Archaeology at Hanga Ho'onu*. Los Osos: Easter Island Foundation.

Tilley, C. 1994. *A Phenomenology of Landscape*. London: Berg.

Thomas, J. 1993. The Politics of Vision and the Archaeologies of Landscape **in** *Landscape: Politics and Perspectives* (B. Bender, ed.). Oxford: Berg.

Thomson, W. 1891. *Te Pito te Henua*. Washington: U. S. National Museum.

Van Tilburg, J. 1988a. Stylistic Variation of Dorsal Design on Easter Island Statues. *Clava* 4. Viña del Mar: Museo Sociedad Fonck.

Van Tilburg, J. 1988b. Easter Island Statue Type, Part Three: The *Moai* as Ideological Symbol **in** *First International Congress Easter Island and East Polynesia* (C. Cristino F., *et al.*, eds.). Santiago: Universidad de Chile.

Van Tilburg, J. 1994. *Easter Island: Archaeology, Ecology, and Culture*. Washington, DC: Smithsonian Institution Press.

Vargas, P. 1991. The Easter Island Sequence and Developments in its Settlement Pattern **in** *Pacific Science Congress* (L.S. Hamilton & H.F. Takeuchi, eds.). Honolulu: White Horse Press.

Vargas, P. 1993. The Easter Island Prehistoric Sequence and Developments in its Settlement Pattern **in** *The Evolution and Organization of Prehistoric Society in Polynesia* (R. Green & M. Graves, eds.). Auckland: New Zealand Archaeological Monograph, Vol. 19.

Vargas, P. 1998. Rapa Nui Settlement Patterns, *Easter Island and East Polynesian Prehistory. Proceedings of the Second International Congress on Easter Island and East Polynesia* (P. Vargas, ed.); pp.111-130. Santiago.

Vargas, P., C. Cristino & R. Izaurieta. 2006. *1000 Aňos en Rapa Nui – Arqueología del Asentamiento*. Santiago: Editorial Universitaria.

Wallin, P.; C. Stevenson; & T. Ladefoged. 2005. Sweet Potato Production on Rapa Nui **in** *The Sweet Potato in Oceania a Reappraisal* (C. Ballard; M. Bourke; & T. Harwood eds.); pp.85-88. Sydney: ANU Press.

Wheatley, D. 1995. Cumulative Viewshed Analysis: A GIS-Based Method for Investigating Intervisibility, and its Archaeological Application **in** *Archaeology and Geographical Information Systems: A European Perspective* (Z. Stančič, ed.); pp.175-188. London: Taylor and Francis.

Wheatley, D. 2004. Making Space for an Archaeology of Place. *Internet Archaeology* 15.

Wheatley, D. & M. Gillings. 2002. *Spatial Technology and Archaeology: The Archaeological Applications of GIS*. New York: Taylor and Francis Inc.

Wozniak, J. 2001. Landscapes of Food Production on Easter Island: Successful Subsistence Strategies **in** *Pacific 2000: Proceedings of the Fifth International Conference on Easter Island and the Pacific* (C.M. Stevenson, G. Lee, & F.J. Morin, eds.); pp.91-101. Los Oos: Easter Island Foundation.

Yekutieli, Y. 2006. Is Somebody Watching You? Ancient Surveillance Systems in the Southern Judean Desert. *Journal of Mediterranean Archaeology* 19(1):65-89.

Manuscript received October 20, 2008; reviews sent to author March 2, 2009; revised manuscript accepted March 16, 2009

"We human beings "are born as islands". Before birth we float happily in the amniotic fluid, in the ocean of the maternal womb."
— James Hamilton